

# RF EXPOSURE Test Report

**Report No.** : MTi251110021-0102E3  
**Date of issue** : 2026-04-20  
**Applicant** : Changsha Sonicake Technology Co., LTD  
**Product** : Digital Ukulele  
**Model(s)** : QUK-01, QUK-yzzzz(y: any number, z: any capital letter or number, could be omitted)  
**FCC ID** : 2A7J4-QUK01

**Shenzhen Microtest Co., Ltd.**



# TEST REPORT

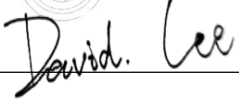
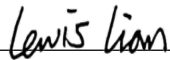
Report No.: MTi251110021-0102E3

## Table of contents

|   |                                                    |   |
|---|----------------------------------------------------|---|
| 1 | Standalone SAR test exclusion considerations ..... | 4 |
| 2 | SAR Test Exclusion Thresholds .....                | 5 |

## TEST REPORT

Report No.: MTi251110021-0102E3

| Test Result Certification |                                                                                                                                                                        |                                                                                       |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Applicant                 | Changsha Sonicake Technology Co., LTD                                                                                                                                  |                                                                                       |
| Applicant Address         | Building 1, No. 20, Qingshan Road, Dongfanghong Street, High-tech Development Zone, Changsha, Hunan Province                                                           |                                                                                       |
| Manufacturer              | Changsha Hotone Audio Co.,LTD                                                                                                                                          |                                                                                       |
| Manufacturer Address      | Building 1, Zhongju Science and Technology Industrial Park, No.20 Qingshan Road, Dongfang Hong Street, Yuelu High-tech Development Zone, Changsha City, Hunan Province |                                                                                       |
| Factory                   | Changsha Hotone Audio Co.,LTD                                                                                                                                          |                                                                                       |
| Factory Address           | Building 1, Zhongju Science and Technology Industrial Park, No.20 Qingshan Road, Dongfang Hong Street, Yuelu High-tech Development Zone, Changsha City, Hunan Province |                                                                                       |
| Product description       |                                                                                                                                                                        |                                                                                       |
| Product name              | Digital Ukulele                                                                                                                                                        |                                                                                       |
| Trademark                 | Sonicake                                                                                                                                                               |                                                                                       |
| Model name                | QUK-01                                                                                                                                                                 |                                                                                       |
| Series Model(s)           | QUK-yzzzz(y: any number, z: any capital letter or number, could be omitted)                                                                                            |                                                                                       |
| Standards                 | 47 CFR Part 2.1093                                                                                                                                                     |                                                                                       |
| Test method               | KDB 447498 D01 v06                                                                                                                                                     |                                                                                       |
| Testing Information       |                                                                                                                                                                        |                                                                                       |
| Date of test              | 2026-01-21 to 2026-04-16                                                                                                                                               |                                                                                       |
| Test Result               | Pass                                                                                                                                                                   |                                                                                       |
| Prepared by:              | Yanice Xie                                                                                                                                                             |  |
| Reviewed by:              | David Lee                                                                                                                                                              |  |
| Approved by:              | Lewis Lian                                                                                                                                                             |  |

## 1 Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition(s), listed below, is (are) satisfied.

These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

The minimum test separation distance defined in 4.1 f) is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander.

To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified, typically in the SAR measurement or SAR analysis report, by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, according to the required published RF exposure KDB procedures.

When no other RF exposure testing or reporting are required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for SAR test exclusion.

When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions.

- a) For 100 MHz to 6 GHz and test separation distances  $\leq 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

- $f_{(\text{GHz})}$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

- b) For 100 MHz to 6 GHz and test separation distances  $> 50$  mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

- 1)  $\{[\text{Power allowed at } \textit{numeric threshold} \text{ for } 50 \text{ mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$  mW, for 100 MHz to 1500 MHz
- 2)  $\{[\text{Power allowed at } \textit{numeric threshold} \text{ for } 50 \text{ mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$  mW, for  $> 1500$  MHz and  $\leq 6$  GHz

- c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 1) For test separation distances  $> 50$  mm and  $< 200$  mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by  $[1 + \log(100/f(\text{MHz}))]$

- 2) For test separation distances  $\leq 50$  mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by  $\frac{1}{2}$
- 3) SAR measurement procedures are not established below 100 MHz.

When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any SAR test results below 100 MHz to be acceptable.

## 2 SAR Test Exclusion Thresholds

We use 5mm as separation distance to calculated.

Bluetooth DTS(ESP32S3):

| Transmit Frequency (MHz) | Mode | Measured Power (dBm) | Tune-up power (dBm) | Max tune-up power(dBm) | Result calculation | 1g SAR test exclusion threshold |
|--------------------------|------|----------------------|---------------------|------------------------|--------------------|---------------------------------|
| 2402                     | GFSK | -6.37                | $(-6)\pm 1$         | -5                     | 0.0980             | 3                               |
| 2440                     |      | -7.33                | $(-7)\pm 1$         | -6                     | 0.0785             | 3                               |
| 2480                     |      | -9.49                | $(-9)\pm 1$         | -8                     | 0.0499             | 3                               |

Bluetooth DTS(BP1532B2):

| Transmit Frequency (MHz) | Mode | Measured Power (dBm) | Tune-up power (dBm) | Max tune-up power(dBm) | Result calculation | 1g SAR test exclusion threshold |
|--------------------------|------|----------------------|---------------------|------------------------|--------------------|---------------------------------|
| 2402                     | GFSK | 2.74                 | $(2)\pm 1$          | 3                      | 0.6185             | 3                               |
| 2440                     |      | 2.22                 | $(2)\pm 1$          | 3                      | 0.6233             | 3                               |
| 2480                     |      | 1.67                 | $(2)\pm 1$          | 3                      | 0.6284             | 3                               |

## SIMULTANEOUS TRANSMISSIONS

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE. To comply with the MPE, the fraction of the MPE in terms of E2, H2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity. In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

Simultaneous transmit:

| Operating Band | The MPE ratio |
|----------------|---------------|
| BLE(ESP32S3):  | 0.03267       |
| BLE(BP1532B2): | 0.20947       |

## TEST REPORT

Report No.: MTi251110021-0102E3

### Conclusion:

Note 1: BLE(ESP32S3) and BLE(BP1532B2) can work at the same time.

$BLE = 0.03267 + 0.20947 = 0.24214$

For the max result:  $0.24214 \leq 1.0$  for 1g SAR test exclusion threshold, No SAR is required.

## Statement

1. This report is invalid without the seal and signature of the laboratory.
2. The test results of this report are only responsible for the samples submitted. Client shall be responsible for representativeness of the sample and authenticity of the material.
3. The report shall not be partially reproduced without the written consent of the Laboratory.
4. This report is invalid if transferred, altered or tampered with in any form without authorization.
5. The observations or tests with special mark fall outside the scope of accreditation, and are only used for purpose of commission, research, training, internal quality control etc.
6. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

\*\*\*\*\* END OF REPORT \*\*\*\*\*